

AMENDMENTS TO THE SPECIFICATION

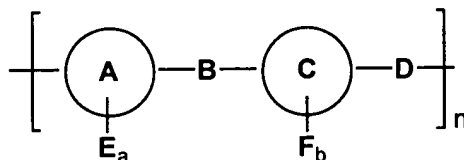
Just prior to the "Related Applications," please insert:

Statement Regarding Federally Sponsored Research or Development

This invention was made with the support under the following government contract:
N00014-97-1-0174 awarded by the Office of Naval Research. The government has certain rights in the invention.

Just prior to page 11, line 19, please insert:

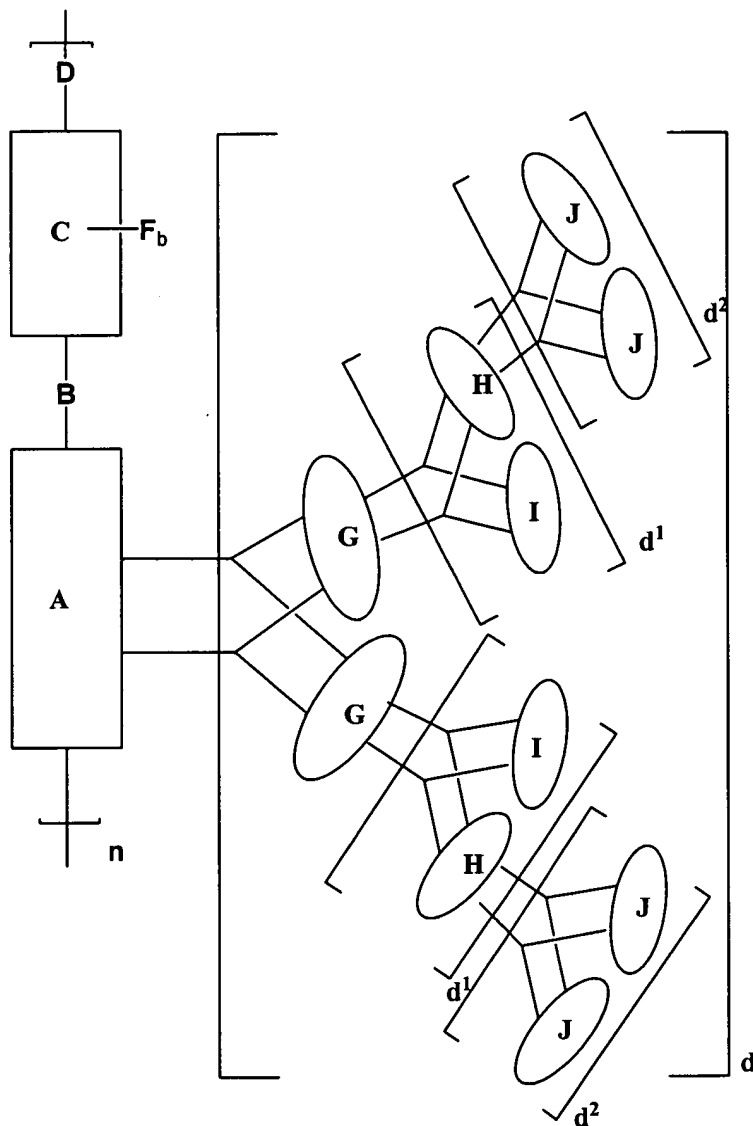
In some embodiments, an article of the present invention may comprise a nanoscopic pathway having a conductivity, an insulating dielectric surrounding the nanoscopic pathway, and a nanoscopic switch in electronic communication with the nanoscopic pathway being capable of altering the conductivity of the nanoscopic pathway. The nanoscopic pathway may comprise a conducting polymer, wherein the conducting polymer has a structure comprising the formula:



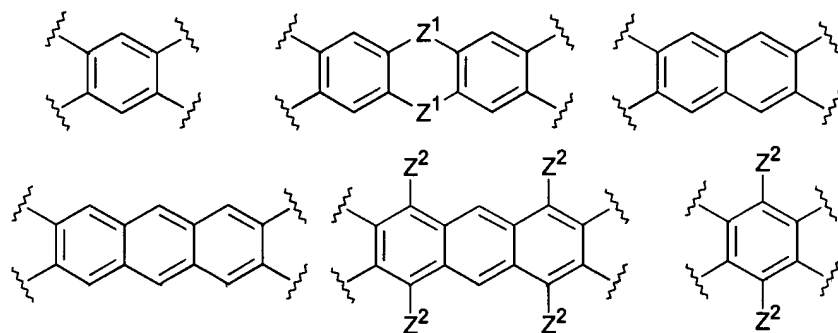
wherein A and C are aromatic groups; B and D can be a heteroatom or metal and chosen from a group of N, P, S, As, Se, or -CC-M-CC-(M=FeL_x, RuL_x, PdL_x, PtL_x, CoL_x, RhL_x, where L is neutral (phosphine, nitrogen, or π -arene based ligand) or charged (nitrogen, oxygen, or charged π -arene ligand), or are selected from the group consisting of a carbon-carbon double bond and a carbon-carbon triple bond; and any hydrogen on aromatic group A and C can be replaced by E and F respectively, wherein a and b are integers which can be the same or different and a = 0 - 4, b = 0 - 4 such that when a = 0, b is nonzero and when b = 0, a is nonzero, and at least one of E and F includes a bicyclic ring system having aromatic or non-aromatic groups optionally interrupted by O, S, NR¹ and CR¹₂ wherein R¹ is selected from the group consisting of hydrogen, C₁-C₂₀ alkyl, C₁-C₂₀ alkoxy

and aryl and n is less than about 10,000, and wherein, when E or F is not said bicyclic ring system, E or F is a part of aromatic group A or C .

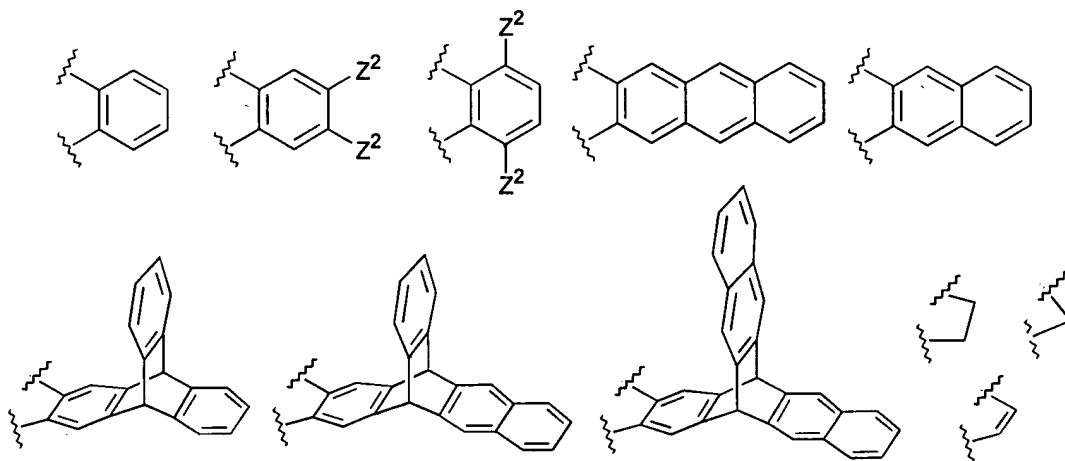
In some cases, E_a may be covalently attached to A , and the conducting polymer comprises the structure:



wherein G , H , I , and J are aromatic groups, $d = 1, 2$, and $d^1 = 0, 1$, such that when $d^1 = 0$, $d^2 = 0$ and when $d^1 = 1$, $d^2 = 0, 1$. In some embodiments, G and H may be the same or different, and each may be selected from the group consisting of:

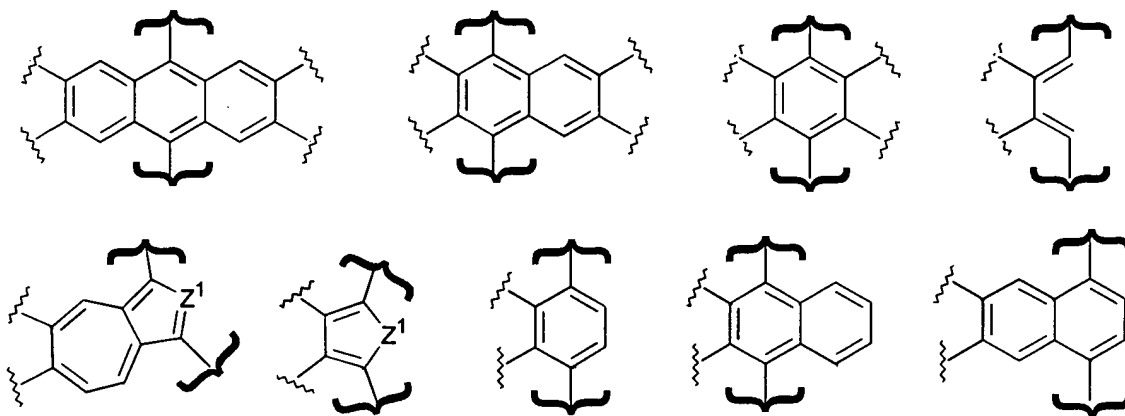


In some embodiments, I and J may be the same or different and each is selected from the group consisting of:

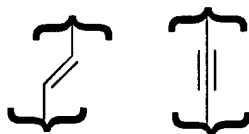


wherein any hydrogen in G, H, I and J can be substituted by R^2 , R^2 is selected from the group consisting of C_1 - C_{20} alkyl, aryl, C_1 - C_{20} alkoxy, phenoxy, C_1 - C_{20} thioalkyl, thioaryl, $C(O)OR^3$, $N(R^3)(R^4)$, $C(O)N(R^3)(R^4)$, F, Cl, Br, I, NO_2 , CN, acyl, carboxylate, hydroxy, R^3 and R^4 can be the same or different and each is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl, Z^1 is selected from the group consisting of O, S and NR^8 wherein R^8 is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl, and Z^2 is selected from the group consisting of F, Cl, OR^3 , SR^3 , NR^3R^4 and $SiR^8R^3R^4$.

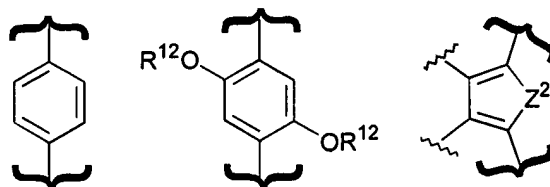
In some embodiments, A may be selected from the group consisting of:



wherein any hydrogen in A can be substituted by R^5 , R^5 is selected from the group consisting of C_1 - C_{20} alkyl, aryl, C_1 - C_{20} alkoxy, phenoxy, C_1 - C_{20} thioalkyl, thioaryl, $C(O)OR^6$, $N(R^6)(R^7)$, $C(O)N(R^6)(R^7)$, F, Cl, Br, NO_2 , CN, acyl, carboxylate, hydroxy; R^6 and R^7 can be the same or different and each is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl; Z^1 is selected from the group consisting of O, S and NR^8 and R^8 is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl; B and D can be the same or different and each is selected from the group consisting of:

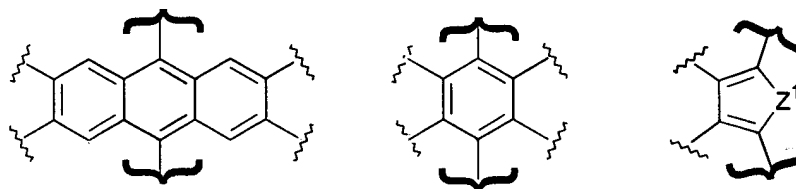


wherein any hydrogen in B and D can be substituted by R^9 , R^9 is selected from the group consisting of C_1 - C_{20} alkyl, aryl, C_1 - C_{20} alkoxy, phenoxy, C_1 - C_{20} thioalkyl, thioaryl, $C(O)OR^{10}$, $N(R^{10})(R^{11})$, $C(O)N(R^{10})(R^{11})$, F, Cl, Br, NO_2 , CN, acyl, carboxylate, hydroxy, R^{10} and R^{11} can be the same or different and each is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl; C may be selected from the aromatic group consisting of:



wherein R^{12} is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl and aryl; any hydrogen in C can be substituted by F which is represented by R^{13} , R^{13} is selected from the group consisting of C_1 - C_{20} alkyl, aryl, C_1 - C_{20} alkoxy, phenoxy, C_1 - C_{20} thioalkyl, thioaryl, $C(O)OR^{14}$, $N(R^{14})(R^{15})$, $C(O)N(R^{14})(R^{15})$, F, Cl, Br, NO_2 , CN, acyl, carboxylate, hydroxy; R^{14} and R^{15} can be the same or different and each is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl; Z^2 is selected from the group consisting of O, S and NR^{16} and R^{16} is selected from the group consisting of hydrogen, C_1 - C_{20} alkyl, and aryl.

In one set of embodiments, A may be selected from the group consisting of:



and both B and D may be:

